AMENDMENTS IN THE CLAIMS:

1-40. (canceled)

41. (currently amended) A method for making a long superconductor, e.g. a tape or wire, by depositing at least one polycrystalline superconducting compound onto a metallic substrate or onto a buffer layer system on said substrate, characterized by the following steps:

- fabricating said metallic substrate or said buffer layer system to consist of or to contain at least on ~~or close to~~ its surface a microstructure of longitudinally oriented, long grains with a high aspect ratio, $a = L_{par}/L_{per}$ exceeding 1.5, and
- epitaxially growing said superconducting compound on said substrate or on a top layer of said buffer layer system to produce a percolation path of long superconducting grains being aligned longitudinally and exhibiting a high aspect ratio such that their projection, being characterized by a length L_{par} parallel to the longitudinal extension of said superconductor and a length L_{per} perpendicular thereto, has an aspect ratio $a = L_{par}/L_{per}$ exceeding 1.5, the total volume V of said long superconducting grains exceeding 10% of the volume of said superconducting compound.

42. (previously presented) The method according to claim 41, wherein the buffer layer system is provided on a substrate of arbitrary structure, the top layer of said buffer layer system containing or consisting of a microstructure of longitudinally aligned grains with the high aspect ratio, $a = L_{par}/L_{per}$ exceeding 1.5, and wherein the superconducting compound is grown on said top layer of said buffer layer system.

43. (canceled)

44. (previously presented) The method according to claim 41, wherein the microstructure of a surface of the substrate or of the top buffer layer is controlled by mechanical, atom-beam, or ion-beam treatment to produce the longitudinally oriented, long grains with the high aspect ratio.

45. (previously presented) The method according to claim 44, wherein the microstructure of the surface of the substrate or of the top buffer layer is treated to produce grooves in said surface, said grooves having a depth of about 100nm, a length of about 100µm and a density of about 1/µm.

46. (previously presented) The method according to claim 44, wherein the microstructure control steps are executed and/or repeated until an average angular misorientation of the produced long grains of the superconducting compound of less than 15° is achieved.

47. (previously presented) The method according to claim 41, wherein the superconducting compound is deposited from the vapor phase.

48. (currently amended) The method according to claim 41, wherein the deposition of the superconducting compound [~~or~~] is performed from a solution.

49. (canceled)

50. (previously presented) An at least partly superconducting object, in particular a wire or cable, comprising a superconductor fabricated according to claim 41.

51. (previously presented) The method according to claim 42, wherein the buffer layer system consists of a single layer only.

52. (previously presented) The method according to claim 41, wherein the aspect ratio a > 4.

53. (previously presented) The method according to claim 41, wherein the total volume V > 25%.

54. (previously presented) The method according to claim 41, wherein the superconducting compound is a polycrystalline multilayer arrangement whose layers have different compositions.

55. (currently amended) The method according to claim 54, wherein at least one layer of the superconducting compound is ~~or contains~~ a cuprate.

56. (previously presented) The method according to claim 54, wherein at least one superconducting compound of the layers belongs to the $ReBa_2Cu_3O_{7-\delta}$ family, Re being a rare earth including La or Y.

57. (currently amended) The method according to claim 41, wherein the grains of the substrate and/or the grains of the superconductor are aligned such that the average misorientation angle is below 20°.

58. (previously presented) The method according to claim 41, wherein the substrate is a metallic tape such as steel or a Ni alloy with a thickness in the range of 20 to 100 µm, whose surface grains are appropriately aligned.

59. (previously presented) The method according to claim 42, wherein the buffer layer system comprises a plurality of sublayers such as $CeO_2/YsZ/CeO_2$.